# Plastic industries

Industries use a wide range of plastics, primarily categorized into thermoplastics (which can be melted and remolded repeatedly)
and thermosets (which set permanently after initial heating).

**- Common types of plastics used in various industries include:**

**- Commodity Plastics:**

These are general-purpose, high-volume, low-cost plastics used in a vast array of everyday and industrial items.

1. **Polyethylene (PE):**
The most common plastic globally, known for its chemical resistance and durability. It comes in different densities:
* **High-Density Polyethylene (HDPE):**
Rigid and strong; used for pipes, containers, and cutting boards.
* **Low-Density Polyethylene (LDPE):**
More flexible; used for plastic bags, film wrap, and flexible tubing/hoses.
* **Ultra-High Molecular Weight Polyethylene (UHMWPE):**
Extremely resistant to abrasion and impact; used in bearings, gears, and even artificial joint implants.
* **Polypropylene (PP):**
Strong, heat-resistant, and flexible, with excellent chemical resistance.
Applications:
Automotive parts, lab equipment, food containers, and textiles.
* **Polyvinyl Chloride (PVC):**
A versatile material available in both rigid and flexible forms.

Applications:
Construction materials (pipes, window frames), electrical cable insulation, medical tubing, and flooring.

*** Polystyrene (PS):**
A rigid, lightweight plastic used in solid form and as a foam (Styrofoam).
Applications:
Packaging, disposable cups and plates, and insulation.

*** Polyethylene Terephthalate (PET):**
Known for its strength, clarity, and barrier properties.
Applications: Beverage bottles, food containers, and synthetic fibers for clothing.

**- Special Plastics:**
These plastics offer enhanced mechanical, thermal, and chemical properties, making them suitable for more demanding applications where they often replace metal, glass, or ceramics.

*** Acrylonitrile Butadiene Styrene (ABS):**
Tough, impact-resistant, and easy to process.
Applications: Automotive parts (dashboards, bumpers), electronics housings, and protective

headgear.

*** Polycarbonate (PC):**

Exceptionally strong, impact-resistant, and transparent.

Applications:

Lenses (eyewear, car headlights), safety shields, and CDs/DVDs.

*** Polyamide (PA) (Nylon):**

Known for high strength, wear, and abrasion resistance.

Applications: Gears, bearings, mechanical parts, and textiles.

*** Polyoxymethylene (POM) (Acetal):**

Offers high stiffness, low friction, and excellent dimensional stability.

Applications:

Precision parts, gears, and bearings.

*** Polytetrafluoroethylene (PTFE) (Teflon):**

Renowned for its non-stick properties, chemical inertness, and high-temperature resistance.

Applications:

Non-stick coatings, chemical-resistant seals and gaskets, and bearings.

The selection of a specific plastic depends heavily on the required performance criteria for a given industrial application.

## More:

https://archive.org/details/forming_machines

https://archive.org/details/shoes_insole

## By: Haytham Zeidan

https://archive.org/details/@wazefapress

## Resources:


https://en.wikipedia.org/wiki/Plastic

https://www.xometry.com/resources/materials/what-is-plastic/

https://www.acplasticsinc.com/informationcenter/r/7-different-types-of-plastic-and-how-they-are-used

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https://en.wikipedia.org/wiki/Engineering_plastic

https://millenniumalloys.ca/industrial-plastics-everything-you-need-to-know/

https://www.kemi.se/en/chemicals-in-our-everyday-lives/advice-on-chemical-smart-choices/materials-and-substances/plastic/some-common-types-of-plastic

https://en.wikipedia.org/wiki/Natural_rubber

https://en.wikipedia.org/wiki/Synthetic_rubber

https://www.bpf.co.uk/plastipedia/how-is-plastic-made.aspx

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https://ar.powerfulsky.com/info/what-should-the-temperature-of-plastic-injecti-98201516.html

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